

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended) A method of determining ~~the~~a rate of dilution of ~~the~~a lubricating oil by ~~the~~ fuel of an internal combustion engine, where either the lubricating oil or the fuel is marked with a radioactive tracer, the method comprising: wherein:

- ~~— either the lubricating oil or the fuel is marked with a radioactive tracer,~~
- measuring ~~the~~ radioactivity of an oil sample ~~is measured~~ using a detector that is sensitive to ~~the~~ radioactive radiation emitted by the radioactive tracer, ~~and~~
- transmitting ~~the~~ results of ~~these~~ the measurements ~~are transmitted~~ to a computer, and
- the computer calculating ~~which calculates from these results~~ the rate of dilution of the lubricating oil by the fuel based on the results.

2. (currently amended) ~~A~~The method according to claim 1, wherein ~~it is~~ the lubricating oil ~~that~~ contains the radioactive tracer.

3. (currently amended) ~~A~~The method according to claim 1, wherein ~~it is~~ the fuel ~~that~~ contains the radioactive tracer.

4. (currently amended) ~~A-The method according to ~~one of the preceding~~~~
~~claims~~claim 1, wherein the oil sample for which the radioactivity is measured is ~~carried~~
conveyed towards the detector and then re-injected into ~~the~~an oil system of the internal
combustion engine by a deviation.

5. (currently amended) ~~A-The method according to claim 4, wherein the deviation~~
takes the oil sample from an area of the oil system of the engine which ~~is~~is under no or low oil
pressure.

6. (currently amended) ~~A-The method according to ~~any of the preceding~~~~
~~claims~~claim 1, wherein the radioactive tracer is an organic or mineral compound of a radioactive
element, ~~preferably an organic compound of a radioactive element.~~

7. (currently amended) ~~A-The method according to ~~one of the preceding~~~~
~~claims~~claim 6, wherein the radioactive element has a half-life of less than 3 years, ~~preferably less~~
~~than 1 year, and in particular less than 30 days.~~

8. (currently amended) A-The method according to claim 7, wherein the radioactive element is selected ~~among~~ from the group consisting of ^{22}Na , ^{65}Zn , ^{45}Ca , ^{35}S , ^{32}P , ^{47}Ca , ^{99}Mo , ^{82}Br , ^{64}Cu , $^{99\text{m}}\text{Tc}$, ^{28}Mg , ^{68}Ge , ^{69}Ge , ^{77}Ge , ^{85}Sr and ^{56}Co .

9. (currently amended) A-The method according to claim 8, wherein the radioactive tracer is selected ~~among~~ from the tetra-alkyl germaniums containing ^{69}Ge , ~~preferably among the tetra-hexyl germaniums, the tetra-heptyl germaniums and the tetra-octyl germaniums, or a mixture thereof.~~

10. (currently amended) A-The method according to ~~any of the preceding~~ claim 1, wherein the detector is an ionizing radiation detection probe.

11. (currently amended) A ~~device~~ system for monitoring ~~the~~ a rate of dilution of ~~the~~ a lubricating oil by ~~the~~ the fuel of an internal combustion engine, the internal combustion engine being lubricated by a lubricating oil and supplied with an air/fuel mixture, with either the lubricating oil or the fuel containing a radioactive tracer, the system ~~wherein it comprises~~ comprising:

- ~~an internal combustion engine, lubricated by a lubricating oil and supplied with an air/fuel mixture, with either the lubricating oil or the fuel containing a radioactive tracer,~~

- a means ~~allowing the~~ for temporary temporarily sampling and ~~the re-injection then~~ re-injecting, continuously or discontinuously, ~~of an oil sample from the~~ an oil system of the internal combustion engine,
- a detector, sensitive to ~~the~~ radioactive radiation emitted by the radioactive tracer present in the oil sample and operable to measure the emitted radioactive radiation, which is in the immediate vicinity of this provided adjacent to the means ~~of~~ for temporary sampling and re-injection of the oil sample, and
- a computer, connected to ~~said the~~ detector; ~~a computer~~ is programmed to calculate, from ~~the~~ measurement results provided by ~~said the~~ detector ~~of the measurements of the radioactivity of the oil sample~~, the rate of dilution of the lubricating oil by the fuel.

12. (currently amended) ~~A~~ The device system according to claim 11, wherein ~~it is~~ the lubricating oil ~~that~~ contains the radioactive tracer.

13. (currently amended) ~~A~~ The device system according to claim 11, wherein ~~it is~~ the fuel ~~that~~ contains the radioactive tracer.

14. (currently amended) ~~A~~ The device system according to ~~either of the claims 11 and 12~~ claim 11,

wherein the means for temporary sampling and re-injection of the oil sample ~~allowing the temporary sampling and the re-injection, continuously or discontinuously, of an oil sample~~ is a deviation.

15. (currently amended) ~~A-The device system~~ according to claim ~~14~~11, wherein the means for temporary sampling and re-injection of the oil sample ~~deviation~~ samples and re-injects the oil sample in an area of the oil system of the engine which is under no or low oil pressure.

16. (currently amended) ~~A-The device system~~ according to ~~any of the claims 11 to 15~~claim 11, wherein

the radioactive tracer is an organic or mineral compound of a radioactive element, ~~preferably an organic compound of a radioactive element.~~

17. (currently amended) ~~A-The device system~~ according to ~~any of the claims 11 to 16~~claim 16, wherein the radioactive element has a half-life of less than 3 years, ~~preferably less than 1 year, and in particular less than 30 days.~~

18. (currently amended) ~~A-The device system~~ according to claim 17, wherein the radioactive element is selected ~~among~~ from the group consisting of ²²Na, ⁶⁵Zn, ⁴⁵Ca, ³⁵S, ³²P, ⁴⁷Ca, ⁹⁹Mo, ⁸²Br, ⁶⁴Cu, ^{99m}Tc, ²⁸Mg, ⁶⁸Ge, ⁶⁹Ge, ⁷⁷Ge, ⁸⁵Sr and ⁵⁶Co.

19. (currently amended) ~~A The device system according to claim 18, wherein the radioactive tracer is selected among from the tetra-alkyl germaniums containing ^{69}Ge , preferably among the tetra-hexyl germaniums, the tetra-heptyl germaniums and the tetra-octyl germaniums, or a mixture thereof.~~

20. (currently amended) ~~A The device system according to any of the claims 11 to 19 claim 11, wherein the detector is an ionizing radiation detection probe.~~

21. (new) The method according to claim 1, wherein the radioactive tracer is an organic compound of a radioactive element.

22. (new) The method according to claim 6, wherein the radioactive element has a half-life of less than 1 year.

23. (new) The method according to claim 6, wherein the radioactive element has a half-life of less than 30 days.

24. (new) The method according to claim 8, wherein the radioactive tracer is selected from the group consisting of tetra-hexyl germaniums, tetra-heptyl germaniums and tetra-octyl germaniums or a mixture thereof.

25. (new) The system according to claim 11, wherein the radioactive tracer is an organic compound of a radioactive element.

26. (new) The system according to claim 16, wherein the radioactive element has a half-life of less than 1 year.

27. (new) The system according to claim 16, wherein the radioactive element has a half-life of less than 30 days.

28. (new) The system according to claim 18, wherein the radioactive tracer is selected from the group consisting of tetra-hexyl germaniums, tetra-heptyl germaniums and tetra-octyl germaniums or a mixture thereof.